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Mesenchymal stem cells isolated from a novel equine tissue exhibit embryonic molecular markers and adipogenic differentiation potential

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ABSTRACT

Mesenchymal stem cells (MSC) have been isolated from equine tissues, most notably adipose and bone marrow. On the basis of ability for self-renewal, molecular marker expression and differentiation potential, we characterized MSCs isolated from a tissue not yet explored in the equine. After isolation, MSCs were maintained in culture for 25 passages before senescence was observed. Reverse transcription-PCR revealed embryonic transcription factor Oct4 mRNA, as well as mRNA for fucosyltransferase 4 and ST3 B-galactoside α 2,3 sialyltransferase 2, two enzymes responsible for synthesis of embryonic surface markers SSEA1 and SSEA4, respectively. Treatment with insulin, dexamethasone, indomethacin and isobutylmethylxanthine led to increased oil red O staining ($P<0.05$) indicating successful adipogenic differentiation. These data indicate the stem-like nature of these cells and their successful isolation from this tissue source. However, further characterization is needed to determine their full potential.

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